



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Michael Allen Siracki § GROUP ART UNIT: 3671
Serial No.: 10/015,199 §
Filed: December 11, 2001 § EXAMINER: M. Petravick
For: High Offset Bits With
Super-Abrasives Cutters §

Affidavit of Michael A. Siracki

Atty. Dkt. No. 1030-15203
October 14, 2002

Commissioner for Patents
Washington, D. C. 20231

Sir:

PURPOSE OF DECLARATION

This declaration is to establish the deficiency of U.S. Patent No. 4,657,093 as prior art against the present application.

STATEMENT OF FACTS

1. I, Michael A. Siracki, am over 18 years of age and have 13 years experience in the field of drill bit design.
2. I have read U.S. Patent No. 4,657,093 (Schumacher).
3. Based on my understanding of drill bit design, it is clear that the bits disclosed in the Schumacher patent are for use in soft, soft-medium and plastic formations. While Schumacher discusses prior art bits as having 0 to 1/32 inch offset per inch of bit diameter, he does not break this range into values suitable for soft and hard formation bits; soft formation bits will have the higher offset amount, and hard formation bits will be at zero or the lower end. The 1/32 per inch of bit diameter that is disclosed in Schumacher is much higher than the hard formation bits used at the time Schumacher was filed, as well as the typical hard formation bit used today. One skilled in the art generally doesn't try to add offset to hard rock bit as it increases the shear factor, which isn't efficient in drilling hard rock with conventional carbide cutting structures. Accordingly, no one to date has commercialized a bit with or without diamond using the Schumacher claimed ranges. I

believe this is due to the wear encountered with conventional tungsten carbide insert being used, as well as the fact that bits are drilling more footage than in the past, making durability important. Diamond provides this durability and longevity.

4. Typically, prior art hard formation bits have less bit offset than the values for 6-3-x bits shown in Table 1. As recited in claim 44, we are claiming offsets that are at least as great as the greatest values previously disclosed. Using more offset than this would not be considered because too much wear would be encountered in drilling hard rock. Accordingly, conventional roller cone bits are designed to compression fail fracture the rock, rather than fail it in shear. Thus, the Schumacher offsets would be excessive for hard formation bits without the use of diamond, which he does not teach or indicate would be needed.

Table 1

Bit Diameter (D)	Conventional Hard Formation Offsets	Claimed Offsets
$D < 7"$	$X < 1/16"$	$X \geq 1/16"$
$7" \leq D < 12"$	$X < 3/32"$	$X \geq 3/32"$
$12" \leq D$	$X < 5/32"$	$X \geq 5/32"$

5. In the present application, we have discovered that we can add more shear component to drilling hard rock because by using diamond, we can overcome the wear problem that would reduce cutting efficiency.

TIME OF PRESENTATION OF THE DECLARATION

This declaration is submitted with the response to the Office Action Dated July 15, 2002, and is for the purpose of overcoming a ground of rejection or requirement made in the Office Action.

DECLARATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements

were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

SIGNATURE

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